ENGINEERING FOR A BETTER WORLD
FEEZOR
ENGINEERING, INC.

CONSTRUCTION DOCUMENTATION REPORT
BRIDGETON LEACHATE POND CLOSURE

BRIDGETON LANDFILL

BRIDGETON, ST. LOUIS COUNTY, MISSOURI

Prepared For:

Bridgeton Landfill LLC
13570 St. Charles Rock Road
Bridgeton, Missouri 63044

April 2005

Prepared By:

Feezor Engineering, Inc.
406 East Walnut
Chatham, Illinois 62629

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Project # BT-001

CONTENTS

APPENDICES

A. West Lake Quarry Drawings – Proposed Holding Lagoon –Bollinger Surveying Company – 1981

B. As Built Record Drawings

Drawing 001 – Title Page
Drawing 002 – Existing Conditions
Drawing 003 – Excavation Grades
Drawing 004 – Final Conditions

1 INTRODUCTION

1.1 Overview of Project

The documentation provided herein and within the report entitled "Non-Engineering Construction Quality Summary Report" by Herst and Associates, Inc., documents the closure activities of the 5-acre leachate pond at the Bridgeton Landfill in Bridgeton, Missouri. This closure was performed in accordance with the November 1998 report developed by Herst and Associates, entitled " Leachate Pond Closure Work Plan – Bridgeton Landfill, L.L.C", hereinafter referred to as the 1998 Work Plan.

The Bridgeton Landfill, LLC is requesting closure of an approximate 5-acre leachate retention pond. The pond has been used for approximately 13 years to aerate leachate pumped from solid waste landfill operations at the Bridgeton Landfill prior to discharge into the St. Louis Metropolitan Sewer District (MSD).

The retention pond was permitted under 40 CFR 258 (Subtitle D regulations). The pond is being closed in response to the installation of a lift station that allows leachate from the active solid waste landfill operations to be pumped directly to the MSD. The lift station has rendered the pond obsolete and unnecessary.

1.2 Purpose and Scope

The purpose of this report is to provide sufficient documentation of the pond closure. The scope of the project included the removal of the leachate, drying of the sludge, the removal and disposal of the sludge, the removal of the PVC liner, and the grading and vegetation of the backfill.

1.3 Permit History

The Bridgeton Landfill received a Sub-Title D permit from the Missouri Department of Natural Resources (MDNR) on September 17, 1984. The leachate collection system is designed to remove surface water and groundwater, which flow into the landfill. This leachate was directed to a leachate lagoon permitted by the original Sub-Title D permit. The leachate was then directed to MSD, which was most recently permitted by Permit

Number 0511598-02. A pump station was installed north of the leachate lagoon, which rendered the pond unnecessary. Therefore the 1998 Work Plan was submitted to the MDNR November 1998. This work plan was approved by the MDNR on June 18, 1999 and guided the overall closure of the leachate lagoon.

1.4 Regulatory Requirements

Based on the regulatory review that supports closure of the leachate retention pond as a surface impoundment, following is a summary of the significant closure requirements presented in 40 CFR 264.228(a)(1):

- Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoil's, and structures and equipment contaminated with waste and leachate.

The retention pond was closed by removing all leachate and allowing the sludge's to dry. The sludge's liner, and the surrounding embankment soils will were excavated to at least pre-liner grades. Because the extensive sampling has demonstrated that the leachate and sludge are non-hazardous, the excavated materials were disposed of at the Roxana Sanitary Landfill in Edwardsville, Illinois and the Bridgeton Sanitary Landfill in Bridgeton, Missouri.

Verification soil samples were collected when the pre-construction grades were achieved. Verification soil samples were analyzed for volatile organic compounds using EPA SW-846 Method 8260B, semi-volatile organic compounds using EPA SW-846 Method 8270C, and petroleum hydrocarbons using EPA SW-846 Method 8015B. Five samples were collected, which corresponds to approximately one sample per acre. Missouri has published soil clean-up standards referred to as Any-Use Soil Levels (ASLs) in a Missouri Department of Natural Resources document titled "How Clean is Clean? Uniform, Cleanup Standards for Contaminated Sites in Missouri". The results of the verification samples were compared to the ASLs.

Section III(B)(3) of the Uniform Cleanup Standards document requires that representative samples of the soil be tested under TCLP methods. The TCLP results were less than the groundwater quality standards listed in 10 CFR 20-7.

1.5 Contact Information

The Project Manager for the Bridgeton Landfill, L.L.C. is listed below:

Mr. Allen Steinkamp
Environmental Manager
13570 St. Charles Rock Road
Bridgeton, Missouri 63044
Phone: (314) 739-1919
Fax (314) 739-2588
Email: Allen.Steinkamp@awin.com

Representatives of Feezor Engineering, Inc observed the pond closure. The Project Manager for Feezor Engineering, Inc. is listed below:

Mr. Daniel Feezor, P.E.
Feezor Engineering, Inc.
406 East Walnut
Chatham, Illinois 62629
Phone: (217) 753-3988
Fax (217) 753-3989
Email: Dfeezor@Feezorengineering.com

2 ENGINEERING DESIGN AND PLANNING

2.1 Leachate Removal

The leachate pond was used to store and aerate leachate before pumping to MSD. The landfill has 4 leachate sumps within the waste footprint. The leachate sumps consist of 4-foot diameter concrete riser pipes, 5 feet in length. The riser pipes were stacked vertically as the landfill was filled. Sumps LCS-1 through LCS-4 capture leachate through horizontal drains that were installed on top of the natural shale bedrock that serves as the landfill liner. The leachate was pumped from the risers via a piping network to the leachate pond, where it was aerated prior to discharge to the MSD.

It was estimated that approximately 2,000,000 gallons of leachate would require removal before the sludge could be removed. The proposed method to remove the leachate involved establishing a pump station at the pond, and fusion welding HDPE pipe to the existing leachate forcemain connection near well K-128, which was connected to the pump station, which is directly connected to MSD.

2.2 Infrastructure Abandonment

Once the leachate would be removed the infrastructure would require abandonment. This included the existing electrical service, removing the aerators, and plugging the leachate line. The abandoned infrastructure would be disposed in a Sub-Title D Landfill.

2.3 Sludge Removal

The planned approach to remove the sludge involved solidifying it with a desiccant (as necessary), and then loading the sludge onto on-road haul trucks and transporting the sludge to a sanitary landfill approved to accept special waste. The proper testing of the sludge was necessary for acceptance at the receiving landfill. Volume estimation was complicated due to the existing leachate being held in the pond. However, based upon an assumed water depth, it was estimated that approximately 16,000 – 18,000 cubic yards of sludge would be required to be removed.

2.4 PVC Liner Removal

In the planning stages, no as built record documentation could be found. It was assumed that the PVC liner was placed directly on the pre-pond grades as discussed in **Section 2.5**. The PVC liner would be removed and disposed in a Sub-Title D landfill.

2.5 Excavation Grades

The 1998 Work Plan stated that once the PVC liner was removed the underlying soils would be tested. At the time of the 1998 Work Plan development, Section III(B)(3) of the Uniform Cleanup Standards document requires that representative samples of the soil be tested under TCLP methods. The TCLP results must be less than the groundwater quality standards listed in 10 CFR 20-7. Soils from each of the five-verification sample locations were combined into one sample that is subjected to the TCLP testing procedure. The TCLP results were also used to determine the need for additional excavation or clean soil backfill.

Once the underling soil was deemed acceptable, the 1998 Work Plan developed by Herst and Associates stated that the pond would be excavated to pre-pond elevations. The pre-pond grades were defined by a drawing entitled "West Lake Quarry Proposed Holding Lagoon", prepared by Bollinger Surveying Company, dated 1981 (**Appendix A**). It appeared that the existing conditions on this map showed that this area was a holding pond, probably for the quarry operation. Therefore, this topography presented in this 1981 drawing represents the pre-leachate pond elevations. Therefore, not all the berms would have to be removed.

2.6 Final Grades

After the sludge was to be removed, the liner subgrade was planned to be tested to ensure no contamination from the leachate migrated from the PVC liner. Once this was deemed acceptable, the northwest berm was to be used to backfill the floor of the pond to promote positive drainage.

3 CLOSURE ACTIVITIES

The Closure Activities commenced on January 13, 2004, and concluded on January 20, 2005 once the vegetation was deemed acceptable. Herst and Associates, Inc. of St. Charles, Missouri provided the on site construction observation, reporting to Feezor Engineering, Inc.. The closure activities are documented in the Herst and Associates, Inc. report entitled "Non-Engineering Construction Quality Assurance Summary Report – Bridgeton Landfill, LLC", hereinafter referred to as the CQA Summary Report.

The selected contractor was Environmental Contracting, Inc. (ECI) of Carlinville, Illinois.

3.1 Leachate Removal

ECI direct pumped the leachate to the Leachate Well K-128 as documented in the "Removal of Leachate" section in the CQA Summary Report.

3.2 Sludge Removal

Prior to removal of the sludge, samples of the sludge were obtained for analysis as documented in the "Disposal of Slope Soils" section in the CQA Summary Report. This analysis was also used for the Special Waste documentation needed for the Roxana Landfill, in Roxana, IL, in accordance with that state's regulations (35 Ill. Adm. Code 814).

A gravel access road was constructed around the perimeter of the deposited sludge for loading onto licensed special waste hauling aluminum trailers. Prior to loading, the sludge was conditioned using a limestone desiccant. The dewatering of the sludge was documented in the "Sludge Dewatering" section in the CQA Summary Report.

Approximately 16,100 cubic yards of sludge were removed and transported to the Roxana Landfill. The volume was analyzed using a combined January 20, 2004 survey with a February 12, 2004 survey, compared to a May 11, 2004 survey. The excavation grades are illustrated on Drawing 003 of **Appendix B** of this report.

3.3 PVC Liner Removal

The PVC liner was found at the bottom of the sludge. Along the slopes, soil was placed onto the liner for U.V. protection and vegetative growth. This soil was removed and stockpiled for backfill operations. The PVC liner was removed within the project limits to the top of the earthen berm. This liner was disposed in a Sub-Title D landfill. This procedure was discussed in the "Removal and Disposal of Liner Material" section in the CQA Summary Report.

3.4 Final Excavation and Sampling

Once the PVC liner was removed, 5 confirmation samples were taken within the pond area to determine if the underling soils could be left in place. This procedure and the results of this analytical testing are discussed in the "Verification Samples" section in the CQA Summary Report. The 5 sample locations are illustrated on Drawing 003 of **Appendix B** of this report.

The analytical results met the criteria in the 1998 Work Plan, and therefore, no additional soil was excavated. The final excavation grades are illustrated on Drawing 003 of **Appendix B** of this report.

3.5 Final Site Conditions and Restoration

Once the underlying soils were deemed acceptable to be left in place, the site was regraded to promote positive drainage and to establish vegetative growth. The northwest berm was used as backfill material, and approximately 32,000 cubic yards of material was moved to establish the final contours depicted on Drawing 004 of **Appendix B** of this report. Once the site was regraded, the seeding contractor applied a hydroseeding mixture to the entire area that was disturbed. This was documented within the "Seeding of Disturbed Areas" section of the CQA Summary Report.

4 CERTIFICATION

I, Daniel R. Feezor, P.E., do hereby certify to my best knowledge and belief, that the Bridgeton Pond Closure was constructed in accordance with the 1998 Work Plan.

Daniel R. Feezor, P.E.

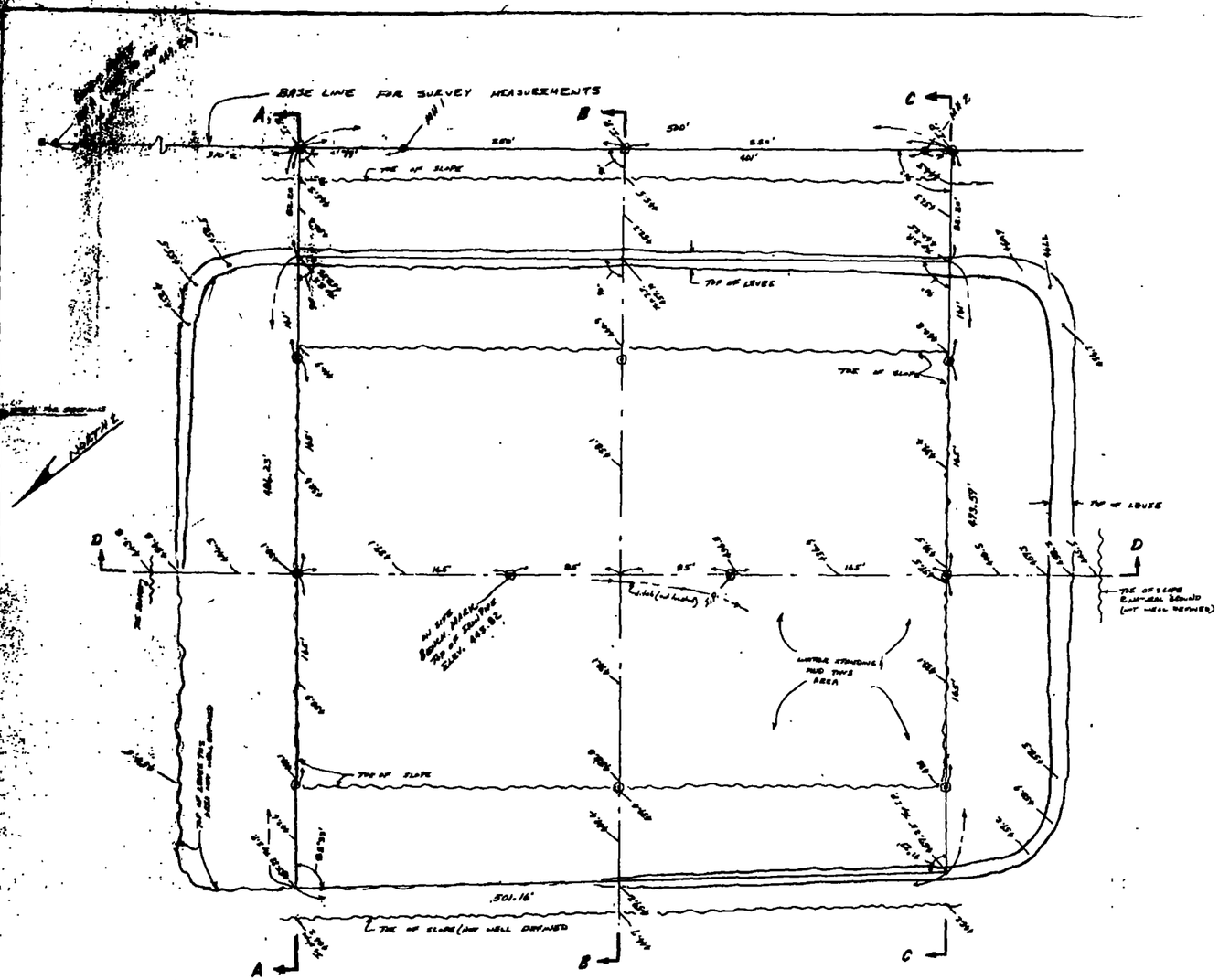
STATE OF MISSOURI
DANIEL
RICHARD FEEZOR
NUMBER
E-30292
REGISTERED PROFESSIONAL ENGINEER

4-7-05

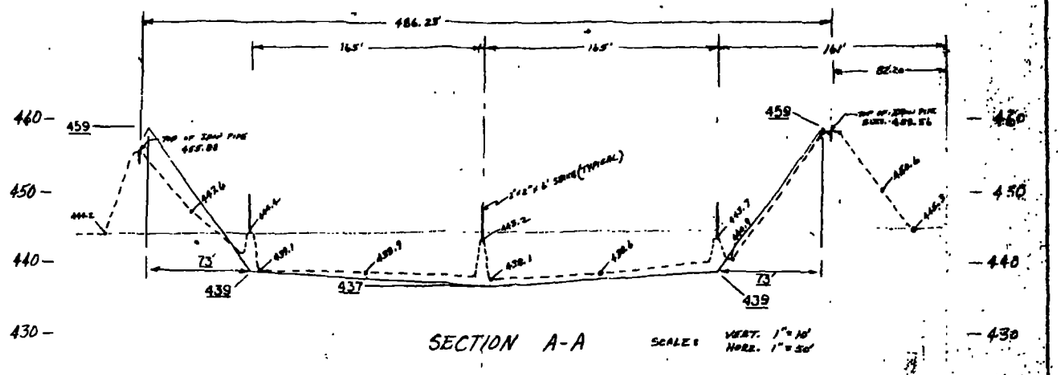
Missouri P.E. Number 030292

APPENDIX A

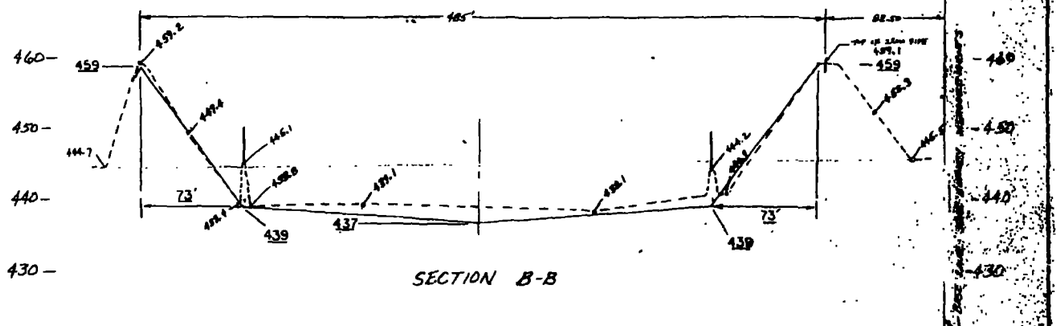
WEST LAKE QUARRY DRAWINGS – PROPOSED HOLDING LAGOON –BOLLINGER SURVEYING COMPANY – 1981



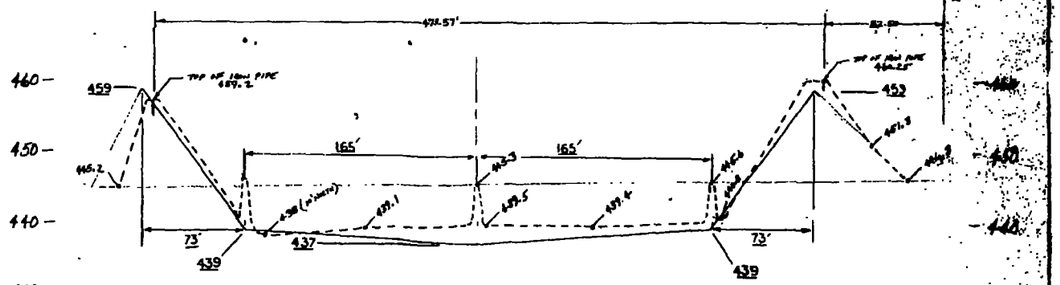
PLAN VIEW — SCALE 1"=50' — HOLDING LAGOON GRADES 7/16/81



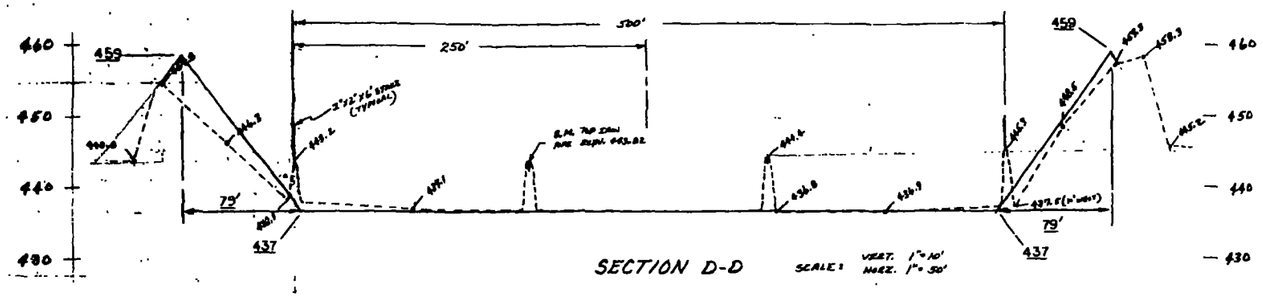
SECTION A-A SCALE: VERT. 1"=10' HORZ. 1"=50'



SECTION B-B



SECTION C-C



SECTION D-D SCALE: VERT. 1"=10' HORZ. 1"=50'

LEGEND:

---- EXISTING

——— FINAL

438.9 EXISTING ELEV.

437 FINAL ELEV.

WEST LAKE QUARRY

-PROPOSED HOLDING LAGOON-

ORDER No. 81-80

BOLLINGER SURVEYING CO.

9502 MINERVA

OVERLAND, MO. 63114

428-2107

REV 7-21-81

APPENDIX B

AS- BUILT RECORD DRAWINGS

Drawing 001 – Title Sheet
Drawing 002 – Existing Conditions
Drawing 003 – Excavation Grades
Drawing 004 – Final Conditions

AS-BUILT RECORD DRAWINGS FOR THE

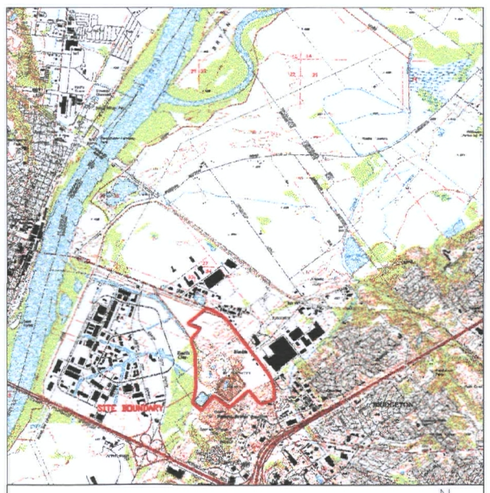
LEACHATE POND CLOSURE

BRIDGETON LANDFILL

BRIDGETON, MISSOURI

APRIL 2005

PREPARED FOR:
BRIDGETON LANDFILL, LLC.



LOCATION MAP

SOURCE: ROCKFORD SOUTH, IL 7.5 MINUTE QUADRANGLE

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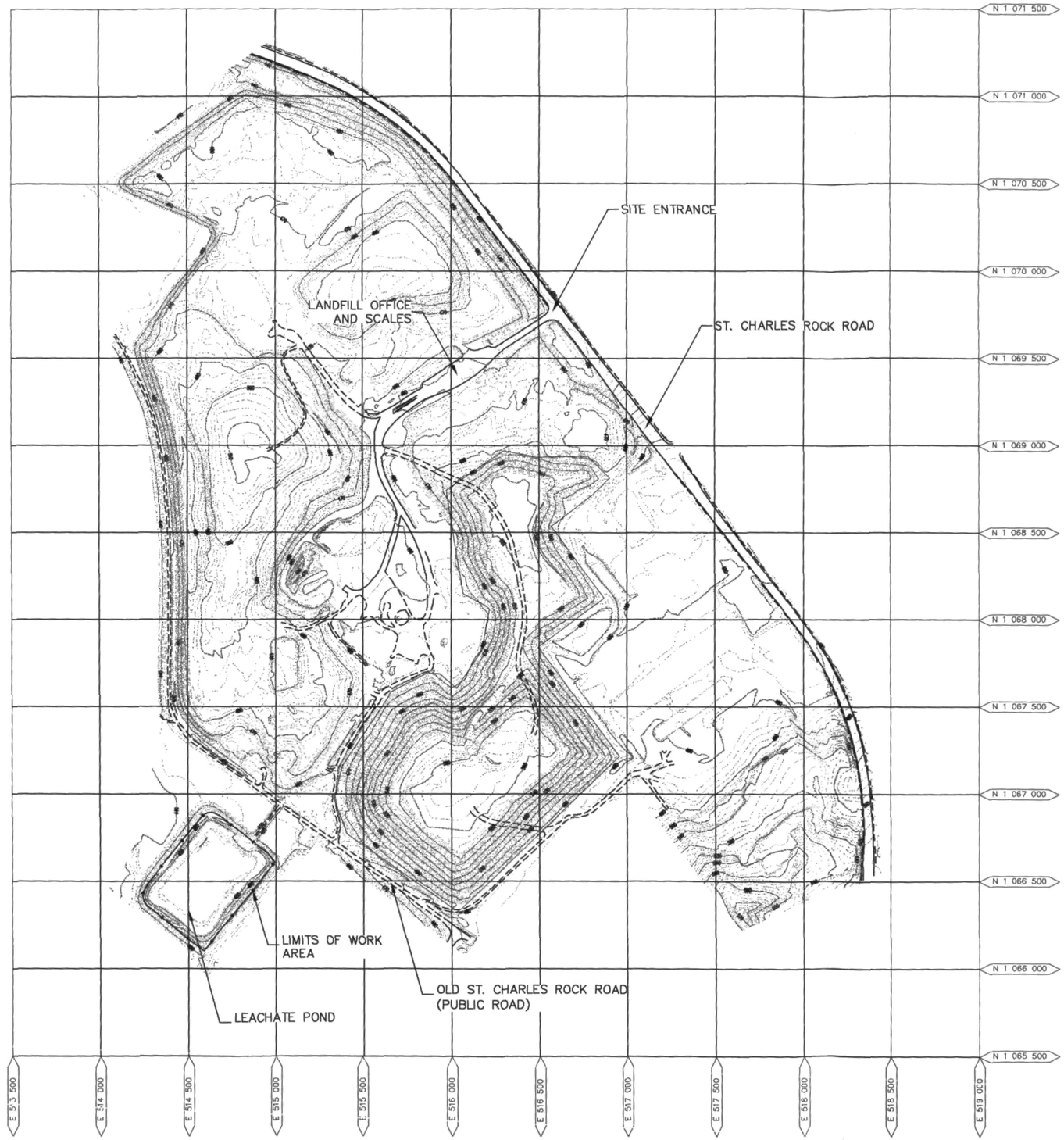
INDEX OF DRAWINGS

Daniel R. Feezor, P.E.

MO P.E. No: 030292 Date



LEGEND

—320— INDEX CONTOUR

INTERMEDIATE CONTOUR

—X— FENCELINE

NOTE:
TOPOGRAPHY BASED UPON 3-1-2004 AERIAL SURVEY BY SANBORN, INC.

FEEZOR ENGINEERING, INC.
Engineering for a Better World

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13570 ST. CHARLES ROCK ROAD
BRIDGETON, MO 63044

BRIDGETON LANDFILL
LEACHATE POND CLOSURE
AS-BUILT RECORD DRAWINGS

EXISTING CONDITIONS

DESIGNED BY: NAC	SCALE: 1"=300'
APPROVED BY: DRF	DATE: 4-2005
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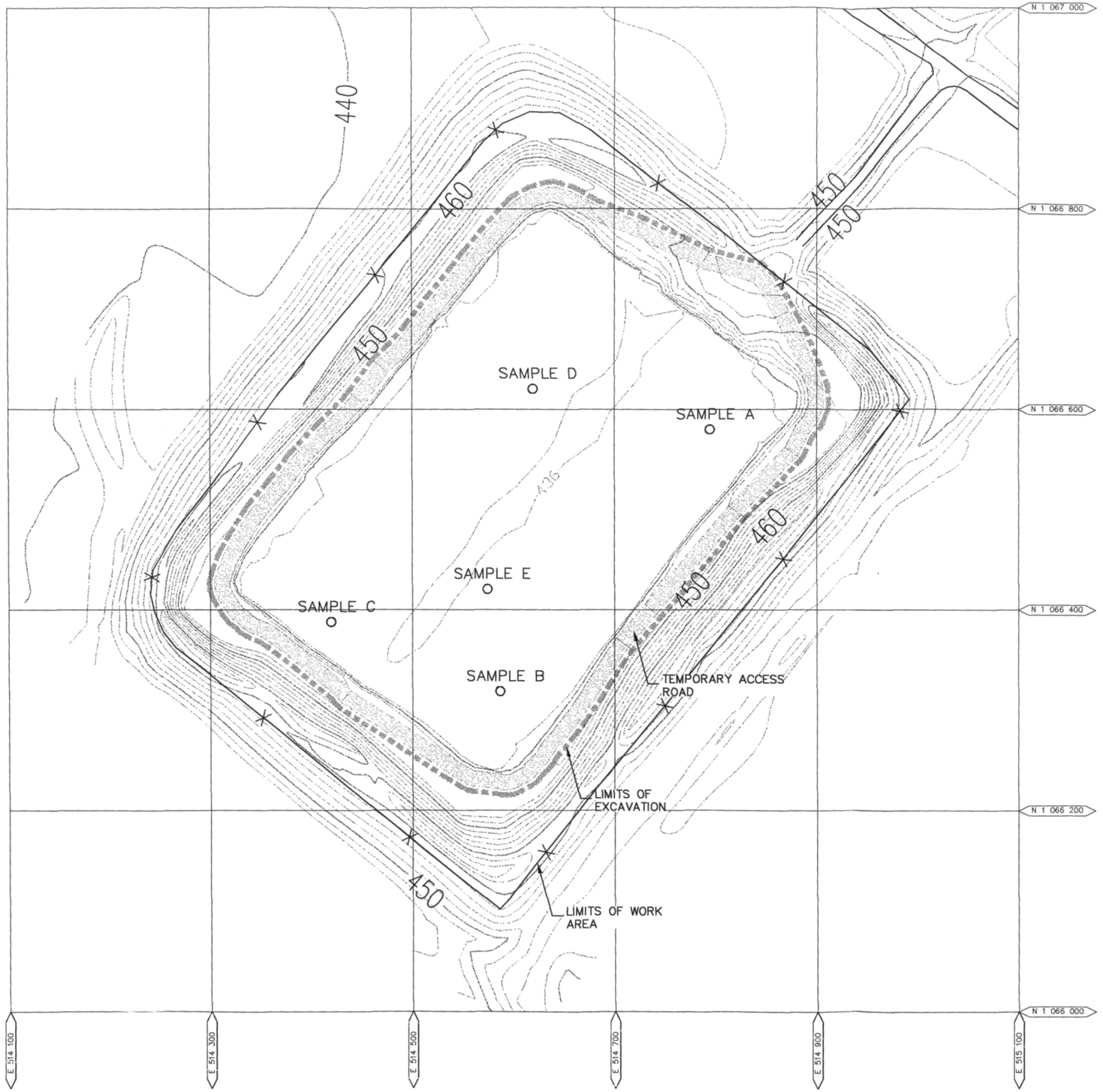
	DRAWING NO.: 002



LEGEND
320 INDEX CONTOUR
INTERMEDIATE CONTOUR
FENCELINE

NOTE:
(1) TOPOGRAPHY BASED UPON 3-1-2004 AERIAL SURVEY BY SANBORN, INC.

(2) EXCAVATION SURVEY DATA TAKEN FROM STANLEY HOLZHAUER, PLS SURVEY DATED 5-11-2004.

FEEZOR ENGINEERING, INC.
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BRIDGETON LANDFILL
LEACHATE POND CLOSURE
AS-BUILT RECORD DRAWINGS

EXCAVATION GRADES

DESIGNED BY: NAC	SCALE: 1"=50'
APPROVED BY: DRF	DATE: 4-2005
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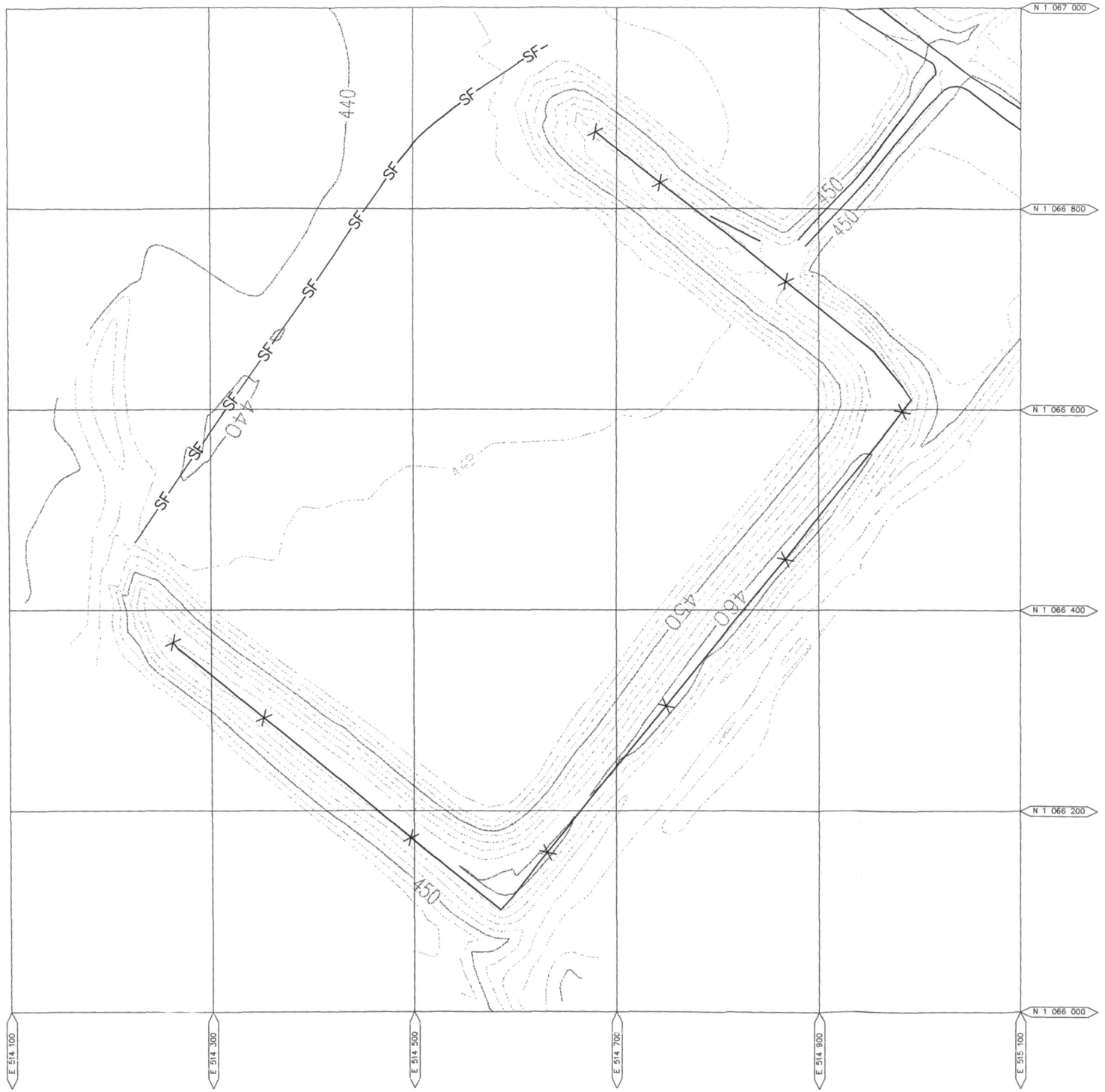

LEGEND

320 INDEX CONTOUR

INTERMEDIATE CONTOUR

FENCELINE

SF SILT FENCE

NOTE:
EXCAVATION SURVEY DATA TAKEN FROM STANLEY HOLZHAUER, PLS SURVEY DATED 5-11-2004.

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BRIDGETON LANDFILL
LEACHATE POND CLOSURE
AS-BUILT RECORD DRAWINGS

FINAL CONDITIONS

DESIGNED BY: NAC	SCALE: 1"=50'
APPROVED BY: DRF	DATE: 4-2005
PATH: C:\FEI\SITES\BT\BT001	

PROJECT NO.: BT-001 | DRAWING NO.: 004